-- Methods to capture, purify, and expand antigen-specific T lymphocytes using magnetic beads coated with recombinant MHC class I molecules are provided herein. Homogenous populations of naïve T cells purified from mice transgenic for the 2C T cell receptor (TCR) were captured on beads coated with MHC class I molecules and the relevant antigenic peptides. An enrichment of 800 to 1600 fold was measured, using 2C T cells mixed with irrelevant T cells, starting from a 2C T cell frequency of 1/3000. The same approach was used to purify antigen-specific $CD8^+$ T cells from total $CD8^+$ T cells from naïve mice. The recovered cells could be expanded and specifically kill target cells *in vitro* and *in vivo*. The methods provided herein are suitable for *in vitro* purification and expansion of tumor- and virus-specific killer T cells for use in cell therapy.--

E1

In the claims:

Please amend claim 16 to read as follows:

16. (Three Times Amended) A substrate for capturing antigens, comprising a support having on its surface immobilized empty Class I molecules, wherein said Class I molecules are capable of binding one or more antigens, wherein said Class I molecules are K^{bm3} or L molecules, and wherein said substrate is not a lipid bilayer.

E2

REMARKS

Claims 16-18 are pending in the present application. Claim 16 has been amended, support for which is found throughout the specification, for example, at page 6, lines 24-25.

Applicants submit herewith a Petition for Revival of an Application for Patent Abandoned Unintentionally under 37 C.F.R. § 1.137 (b).

Preliminarily, Applicants note with appreciation the withdrawal of the prior

rejections.

Additionally, Applicants have amended the abstract to omit the word "new" and to have less than 150 words.

Applicants submit herewith formal drawings for entry into the application, accompanied by a copy of the Notice of Draftsperson's Review.

Claims 16-18 are rejected under 35 U.S.C. § 102(b) for alleged lack of novelty over Burshtyn et al. Applicants have amended the claims to define over Burshtyn et al.

The invention as defined by the solicited claims encompasses novel matrices containing empty major histocompatibility complex (MHC) class I peptides of the K^{bm3} or L, for example but not limited to L^d, type, which can bind and accept a variety of antigens, on a support, thereby forming a substrate for capturing antigens. The support may be a bead, and the antigen(s) may be a peptide.

Burshtyn et al. describes protein A - agarose beads to which H-2$D^b\beta_2$m or H-2K^b molecules are bound via α_1- or α_3-specific antibodies. *See, e.g.,* Burshtyn et al. at page 3071-3072. The beads bound influenza nucleoprotein peptide. *See id.* at page 3073, Fig. 1. Burshtyn et al. does not teach beads to which MHC class I molecules of K^{bm3} or L type are bound, as presently claimed.

Applicants request reconsideration and withdrawal of the rejection.

CONCLUSION

Applicants believe all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, the undersigned may be contacted at 215-557-5908.

Respectfully submitted,

Date: January 30, 2003

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Attachments

Petition for Revival of an Application for Patent Abandoned Unintentionally under 37 C.F.R. § 1.137 (b)
Formal drawings
Copy of the Notice of Draftsperson's Review

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Please amend the abstract as follows:

-- [A new method] Methods to capture, purify, and expand antigen-specific T lymphocytes [has been developed] using magnetic beads coated with recombinant MHC class I molecules are provided herein. [This method was optimized using homogenous] Homogenous populations of naïve T cells purified from mice transgenic for the 2C T cell receptor (TCR) [. These T cells] were captured on beads coated with MHC class I molecules and the relevant antigenic peptides. [MHC and peptide specificity was confirmed by the usage of irrelevant MHC peptide combinations.] An enrichment of 800 to 1600 fold was measured, using 2C T cells mixed with irrelevant T cells, starting from a 2C T cell frequency of 1/3000. The same approach was used to purify antigen-specific $CD8^+$ T cells from total $CD8^+$ T cells from naïve mice. The recovered cells could be expanded and specifically kill target cells *in vitro*[; they had a significant effect] and *in vivo* [as well]. [We expect this procedure to be] The methods provided herein are suitable [to purify and expand *in vitro*] for *in vitro* purification and expansion of tumor- and virus-specific killer T cells for use in cell therapy.--

In the claims:

Please amend claim 16 as follows:

16. (Three Times Amended) A substrate for capturing antigens, comprising a support having on its surface immobilized empty Class I molecules, wherein said Class I molecules are capable of binding one or more antigens, wherein said Class I molecules are K^{bm3} or L molecules, and wherein said substrate is not a lipid bilayer.